

REMARKS

The Applicants wish to express appreciation to Examiner Shapiro for his courtesy during the in-person interview conducted on December 8, 2003. During the interview, the structure, features and operation of the present invention were described, and the distinctions between the pending claims and the reference relied upon by the Examiner were discussed. It is respectfully submitted that all of the claims in the application are patentably distinguishable over the references, and are in condition for allowance. The rejections are discussed below.

Claims 5, 6, 8, 9, 11-30 are pending in the application. Of these, claims 16-23 have been withdrawn from consideration. Claims 6, 8, 9, 14, 15, 24 and 25 were rejected under 35 U.S.C. §103(a) as being unpatentable over Iwasaki et al. Claim 5 was rejected under 35 U.S.C. §103(a) as being unpatentable over Iwasaki in view of Ono et al. Claims 10-13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Iwasaki in view of Kondo et al. Claims 24 and 28 were rejected under 35 U.S.C. §103(a) as being unpatentable over Davis. Claims 11, 24, and 28 have been amended. Claim 10 has been canceled. Reexamination and reconsideration of the application in view of the amendments and following remarks is respectfully requested.

The present invention is directed to a substrate processing apparatus having a plurality of stages. Each stage is capable of supporting containers for transporting substrates. The stages serve as temporary staging areas for the containers of substrates as the containers are moved within the substrate processing apparatus. Each stage has a cut-away area and a clearance area extending from the cut-away area to one end of the stage. A movable table having a sensing device carries containers between stages. The movable table moves horizontally beneath a stage to the cut-away area of the stage in such a manner that its sensing device passes through the clearance area while the movable table is moved into position. This enables the substrate processing apparatus to efficiently detect missing or misaligned substrates in the container while the movable table is being moved into position under a stage. The movable table then moves vertically upwards through the cut-away area, lifts up a container located at the stage, and withdraws the container from the stage in order to transport the container to another stage. The cut-away area is shaped and sized so that only the movable table may pass vertically through the cut-away area, while the container itself is incapable

of passing vertically through the cut-away area. The movable table is mounted to a guide rail for moving the movable table in a horizontal direction. The guide rail works is coupled to and works in conjunction with a turning mechanism for positioning the movable table below one stage with the guide rail being aligned with the cut-away area of that stage, and for subsequently repositioning the movable table below another stage with the guide rail being aligned with the cut-away area of the other stage.

Claims 24 and 28 were rejected under 35 U.S.C. §103(a) as being unpatentable over Davis. The Applicants thank the Examiner for his helpful suggestion during the interview to amend claims 24 and 28 to clarify the description of the H-shaped cut-away area and the area between the H-shaped cut-away area and the end of the stage (termed a "clearance area") as illustrated in FIG. 7, for example. Claim 24 was also amended to include the limitation of claim 10, which recited a "sensing device" coupled to the movable table. With the amendments to claims 24 and 28, it is respectfully submitted that the rejection of claims 24 and 28 have been overcome.

As discussed during the interview and acknowledged on the Interview Summary, Davis does not disclose a sensing device coupled to the movable table, or cut-away areas shaped and sized so that the sensing device has uninterrupted access to the substrates as the movable table moves in a direction perpendicular to the substrates into the first position below the first stage, as recited in claims 24 and 28.

Furthermore, these limitations are not taught or suggested by Davis. Davis discloses sensors mounted on the frame to scan wafers as they are rotated about a hub 92 (see FIG. 6 and col. 7 lines 41-46), or sensors mounted on an overhead frame 166 (see FIG. 6 and col. 8 lines 38-42). Davis contains no teaching or suggestion at all for coupling a sensing device to the movable table. In fact, a sensing device located on the movable table would not work in Davis, because the pie-shaped movable table and cut-away area in Davis are specially shaped and designed with coupling pins (see FIG. 5A) for lifting wafer containers having three triangularly located slots for receiving the coupling pins (see FIG. 5B). In particular, one of the slots is located on the centerline of the carrier. Because of this slot, the cut-away areas of Davis could not possibly be shaped to allow a

sensing device to have uninterrupted access to the substrates as the movable table moves in a direction perpendicular to the substrates into the first position below the first stage (compare the cut-away area of FIG. 5A of Davis with the cut-away area in FIG. 7 of the present invention).

Because Davis does not disclose, teach or suggest all of the limitations of claims 24 and 28, it is submitted that the rejection of those claims under 35 U.S.C. §103(a) as being unpatentable over Davis has been overcome.

Claims 6, 8, 9, 14, 15, 24 and 25 were also rejected under 35 U.S.C. §103(a) as being unpatentable over Iwasaki. It is respectfully submitted that this rejection has also been overcome.

Iwasaki does not disclose a sensing device coupled to the movable table, or cut-away areas shaped and sized so that the sensing device has uninterrupted access to the substrates as the movable table moves in a direction perpendicular to the substrates into the first position below the first stage, as recited in claim 24. In fact, Iwasaki fails to disclose, teach or suggest a sensing device of any sort in any location, or a cut-away area of any sort in any location. The Examiner equates the cut-away area of the present invention with an outlet delivery port 100 in Iwasaki. However, the outlet delivery port 100 is not a cut-away area, but is merely a stage or area on which the wafer cassette may be placed (col. 3 lines 21-22 and 26-28). (The term "port," as used in Iwasaki, refers to a staging area, and is not used according to its common meaning of an "opening." The dashed line in FIG. 4 used to demarcate the outlet delivery port 100 must not be confused for an opening.) The outlet delivery port 100 is not a "cut in a vertical wall," as stated by the Examiner, but rather one or two adjacent horizontal areas (the other being inlet delivery port 104).

Because Iwasaki does not disclose, teach or suggest all of the limitations of claim 24, it is submitted that the rejection of claim 24 under 35 U.S.C. §103(a) as being unpatentable over Iwasaki has been overcome. In addition, because claims 6, 8, 9, 14, 15 and 25 depend from claim 24, the rejection of those claims under 35 U.S.C. §103(a) as being unpatentable over Iwasaki is also respectfully traversed for the reasons provided above with respect to claim 24.

Claim 5 was rejected under 35 U.S.C. §103(a) as being unpatentable over Iwasaki in view of Ono. It is respectfully submitted that this rejection has also been overcome.

Like Iwasaki, Ono does not disclose a sensing device coupled to the movable table, or cut-away areas shaped and sized so that the sensing device has uninterrupted access to the substrates as the movable table moves in a direction perpendicular to the substrates into the first position below the first stage, as recited in claim 5. In fact, Ono fails to disclose, teach or suggest a sensing device of any sort in any location, or a cut-away area of any sort in any location.

Because Neither Iwasaki nor Ono discloses, teaches or suggests all of the limitations of claim 5, it is submitted that the rejection of claim 5 under 35 U.S.C. §103(a) as being unpatentable over Iwasaki in view of Ono has been overcome.

Claims 10-13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Iwasaki in view of Kondo. Note that claim 10 has been cancelled. It is respectfully submitted that this rejection has also been overcome.

Like Iwasaki, Kondo does not disclose a sensing device coupled to the movable table, or cut-away areas shaped and sized so that the sensing device has uninterrupted access to the substrates as the movable table moves in a direction perpendicular to the substrates into the first position below the first stage, as recited in claims 11-13. In fact, Kondo fails to disclose, teach or suggest a movable table of any sort in any location, or a cut-away area of any sort in any location. The sensors 11a and 11b in Kondo (see FIG. 1) are attached to a sensor slide block 12a and move along the sides of a wafer carrier 30. The wafer carrier is not supported on the sensor slide block 12a. Rather, the wafer carrier is held in a fixed position by a holding means not shown in FIG. 1 (see col. 7 lines 65-66). Thus, the sensor slide block is not equivalent to the movable table of claims 11-13, which supports and carries the container between stages.

Because Neither Iwasaki nor Kondo discloses, teaches or suggests all of the limitations of claims 11-13, it is submitted that the rejection of those claims under 35 U.S.C. §103(a) as being unpatentable over Iwasaki in view of Kondo has been overcome.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

If, for any reason, the Examiner finds the application other than in condition for allowance, Applicants request that the Examiner contact the undersigned attorney at the Los Angeles telephone number (213) 892-5752 to discuss any steps necessary to place the application in condition for allowance.

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, Applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no. 199372001800.

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Respectfully submitted,

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